
VERIFICATION AND CERTIFICATION REPORT

Climate Change Capital Limited

**Straw generation project in Wei
county Hebei province, P.R. China**

SGS Climate Change Programme

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Summary:			
<p>SGS United Kingdom Ltd has performed the 1st periodic verification of the CDM project Straw generation project in Wei county Hebei province, P.R. China (UNFCCC Ref. 1546). The verification includes confirming the implementation of the monitoring plan of the registered PDD (UNFCCC Ref. 1546) and the application of the monitoring methodology as per ACM0006: Consolidated methodology for grid-connected electricity generation from biomass residues, version 04, dated 02/11/2006. A site visit was conducted to verify the data submitted in the monitoring report. SGS confirms the following has been reviewed;</p> <ul style="list-style-type: none"> (a) The registered PDD, including the monitoring plan and the corresponding validation report; (b) Monitoring report; (c) The applied monitoring methodology; (d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board; (e) All information and references relevant to the project activity's resulting in emission reductions <p>The project is a grid-connected electricity generation project using renewable resources of biomass. The project is located in Wei county, Hebei province, P. R. China. The install capacity of the project is 1×25MW. The annual straw consumption is expected to be 119,792 t, and the project is expected to deliver 126,500 MWh electricity annually to North China Power Grid (NCPG), which is dominated by fossil-fuel-fired power plant, and thus produce GHG emission reductions of 130,638 tCO₂e every year.</p> <p>SGS confirms that the project is implemented in accordance with the validated and registered Project Design Document. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 100,420 tCO₂e emission reductions during period 25/06/2008 up to 31/01/2009.</p>			
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CDM Verification			
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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CERs	Certified Emission Reductions
CL	Clarification Request
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DRRs	Daily Reading Records
ETN	Electricity Transaction Note
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
MRRs	Monthly Reading Records
NCPG	North China Power Grid
PDD	Project Design Document
PP	Project Participant
SGS	Société Générale de Surveillance
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1. Introduction

1.1 Objective

SGS United Kingdom Ltd has been contracted by Climate Change Capital Limited to perform an independent verification of its CDM project Straw generation project in Wei county Hebei province, P.R. China. CDM projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The emissions report conforms with the requirements of the monitoring plan in the registered PDD and the approved methodology; and
- The data reported are complete and transparent.

1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on the validated and registered project design document and the monitoring report. The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

SGS has, based on the recommendations in the Validation and Verification Manual, employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Project Activity and Period Covered

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	Straw generation project in Wei county Hebei province, P.R. China
UNFCCC Registration Number:	1546
Monitoring Period Covered in this Report	25/06/2008 to 31/01/2009
Location of the Project Activity:	Heying town, Wei County, Xingtai City, Hebei Province, P. R. China.

The project is a grid-connected electricity generation project using renewable resources of biomass. The project is located in Wei county, Hebei province, P. R. China. The install capacity of the project is 1×25MW. The project started generating electricity on 28/12/2006 and started commercial operation on 15/04/2007.

2. Methodology

2.1 General Approach

SGS' approach to the verification is a two-stage process.

In the first stage, SGS completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

At the end of this stage, SGS produced a Periodic Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Periodic Verification Checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

2.2 Verification Team for this Assessment

Name	Role
Simon Zhao Xinguang	Team Leader/Lead Assessor
Michael Wu Shimin	Assessor
Grace Han Huijuan	Local Assessor
Shivaji Chakraborty	Sectoral Expert

2.3 Means of Verification

2.3.1 Review of Documentation

The validated PDD, the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 8 of this report.

2.3.2 Site Visits

As part of the verification, the following on-site inspections have been performed.

Location: Heying town, Wei County, Xingtai City, Hebei Province, P. R. China	
Date: 23/03/2009 – 24/03/2009	
Coverage:	Source of Information / Persons Interviewed
1. Assessment of the implementation and operation of the project activity as per the registered PDD;	Mr. Zhang Wenyi, Senior Associate, Climate Change Capital Limited;
2. Review of information flows for generating, aggregating and reporting the monitoring parameters;	Mr. Hou Xuebing, General Manager, National Bio Energy (Wei County) Co., Ltd.
3. Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan.	Ms. Zheng Shuxiang, Deputy General Manager, National Bio Energy (Wei County) Co., Ltd.
4. A cross-check between information provided in the monitoring report and data from other sources such as plant log books and sales receipts;	Mr. Liu Yanqiang, Deputy General Manager, National Bio Energy (Wei County) Co., Ltd.
5. A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD and the selected methodology;	Ms. Zhao Junying, CDM Coordinator, National Bio Energy (Wei County) Co., Ltd.
6. Review of calculations and assumptions made in determining the GHG data and emission reductions;	Mr. Zhao Chunlei, Director of Fuel Department, National Bio Energy (Wei County) Co., Ltd.
7. Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.	Mr. Sun Zongying, Deputy Manager of Product Department, National Bio Energy (Wei County) Co., Ltd.
	Mr. Ren Lingsu, Deputy Manager of Financial Department, National Bio Energy (Wei County) Co., Ltd.
	Mr. Wang Yongbo, Electrical Specialist, National Bio Energy (Wei County) Co., Ltd.
	Mr. Du Zhiguo, Manager of Comprehensive Department, National Bio Energy (Wei County) Co., Ltd.
	Mr. Li Xin, Operational Director, National Bio Energy (Wei County) Co., Ltd.

2.4 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the team shall raise a Clarification Request (CL) specifying what additional information is required.

Where a non-conformance arises the team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- I. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- II. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- III. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

The verification process may be halted until this information has been made available to comply with the requirements of the CDM Executive Board. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

A clarification request (CL) will be raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

Corrective Action Requests and Clarification requests are raised in the Periodic Verification Checklist. The Project Developer is given the opportunity to “close” outstanding CARs and respond to CLs and Observations.

Forward Action Requests (FARs) may be raised during verification for actions where the monitoring and reporting require attention and/or adjustment for the next verification period. Observations may be raised which are for the benefit of future projects and future verification actors. These have no impact upon the completion of the verification activity.

All CARs, CLs and FARs for this verification period are included in this report.

2.5 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment Team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

3. Verification Findings

3.1 Project Implementation - General

Based on the project information available on the UNFCCC website, <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1200569734.96>, the project was registered on 25/06/2008, and the first crediting period is from 25/06/2008 to 24/06/2015 (renewable). This is the 1st monitoring period. The starting date of this monitoring period is 25/06/2008, which is the starting date of the first crediting period. The end date of this monitoring period is 31/01/2009, which is within the first crediting period (/5/).

The project was registered against ACM0006 Version 04 dated 02/11/2006 (/2/). The monitoring plan is in compliance with the methodology applied by the project.

The project was implemented and the equipment was installed as described in the registered PDD. The installation capacity of the project is 1×25MW. The project started generating electricity on 28/12/2006 and started commercial operation on 15/04/2007, which was prior to the start of this monitoring period.

The project management system has been set up, including CDM Development Manual (/22/), CDM Monitoring and Management Procedures (/23/), Emergency Plan (/24/) and Staff Training Plan (/25/). QA/QC procedures, data management and internal audit procedures are included in CDM Manual. All these procedures and plans are documented, and the members of staff have access to the documents. The documents for this monitoring period are complete and transparent. The project boundary is consistent with the registered PDD. Management and operational system is in place. The members of staff are well trained and qualified (/26/). It is confirmed that the project has been implemented in compliance with the registered PDD.

It is found that the emission reductions and net electricity delivered to the grid by the project during this monitoring period is significantly higher than the estimation in the registered PDD. CL #10 was raised for requesting the PP to clarify why there is a significant difference and to assess the impact on the additionality. Parameters that influence the total emission reductions most are the net electricity delivered to the grid by the project (EG_y) and the biomass consumed by the project (BF_{k,y}). The fact that the emission reductions are higher than the estimates in the PDD is mainly because the increased net electricity delivered to the grid and biomass consumption. The comparison of the actual net electricity delivered to the grid, biomass consumption and emission reductions with the estimates in the PDD is as follows:

Item	Actual	Estimates based on actual situation	PDD	Estimates based on PDD	Difference
	A	B	C	D	E = B/C-1, or E = A/D-1
Days (d)	221	365	365	221	
EG _y (MWh)	96877.28	160000.9	126,500	76593.15	26.483%
BF _{k,y} (t)	122,681.31	202618.5	119,792	72531.59	69.14%
ER _y (tCO ₂ e)	100,420	165852	130,638	79098.62	26.96%

According to the PP's response to the finding, the biomass availability in the region of the project is higher than the estimates in the PDD. The verification team checked the monitoring result of biomass consumed by the project during this monitoring period and found that the quantity of biomass consumed by the project in this monitoring period is 69% higher than the estimate in the registered PDD. The operation hours of the project is highly related to the availability of biomass. The higher availability of biomass led to a higher operation hours in this monitoring period. The operation hours and net electricity delivered to the grid is 26%

higher than the estimates in the PDD. The reason why the project consumed 69% more of biomass but only generated only 26% more of electricity was the net caloric values of the biomasses were lower than the estimates in the PDD. The verification team checked the monitoring result of NCV_k during this monitoring period, and found that the net caloric values of the biomasses were about 0.0121 TJ/t, significantly lower than the estimate in the PDD (0.0174 TJ/t). Based on the above analysis, SGS can confirm that the higher emission reductions achieved in this monitoring period is mainly due to the higher availability of the biomass residues in the region of the project activity.

To assess the impact on the additionality of the project from the increased electricity generation and biomass consumption, the verification team recalculated the IRR of the project using the registered IRR spreadsheet on the UNFCCC website (<http://cdm.unfccc.int/Projects/DB/TUEV-SUED1200569734.96>). In the revised IRR calculation spreadsheet (/30/), the operation hours was increased by 26.483% over the project lifetime, which also led to the increase of net electricity supply by 26.483%. The biomass consumption was increased by 69.14% to 202618.5 t per year. Other parameters were not changed, except those depending on the operation hours (electricity generation) and biomass consumption, as other parameters and the calculation formulas had been validated during validation. The recalculated IRR of the project activity without CDM revenue was 2.24%, which was still below the applied benchmark of 8%. SGS can conclude that the additionality of the project is not changed as a result of the increase of electricity generation and biomass consumption. CL #10 is closed out. The recalculated IRR is lower than estimated in the PDD. The main reason is the NCV of the biomass fuels actually combusted by the project is lower than the estimate in the PDD. The project has to combust more biomass fuels to generate every kWh of electricity. If the project reduces the electricity generation, the IRR will be lower. The comparison of actual emission reductions with the estimates of the registered PDD is contained in the monitoring report version 3.0.

3.2 Remaining Issues, CAR's, FAR's from Previous Validation or Verification

This is the 1st periodic verification for the project. There are no remaining issues from validation (/4/).

3.3 Compliance of the monitoring plan with the monitoring methodology.

The monitoring plan of the registered project is in accordance with the applied methodology ACM0006 version 04. The verification team has checked the monitoring plan against the applied methodology. All the parameters and the monitoring approach discussed in the monitoring plan are verified to be in compliance with the applied methodology. Parameters monitored are EG_y , $BF_{k,y}$, Moisture content of the biomass residues, $FF_{project,plant,d,y}$, $FF_{project,site,d,y}$, $FF_{project,site,d,y}$, NCV_k , NCV_i , $EC_{PJ,y}$, AVD_y , TL_y , DPK_y , $EF_{km, CO_2, y}$, Quantity of available biomass residues of type k in the region, Quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region. QA/QC procedures have been specified for each parameter and are in compliance with the applied methodology.

3.4 Completeness of Monitoring

Monitoring of reductions in GHG emissions to result from the registered project has been implemented in accordance with the monitoring plan contained in the registered PDD. The monitoring mechanism is effective and reliable. All the parameters that need to be monitored are monitored as per the monitoring plan. Detailed information is as follows:

3.4.1 The net electricity delivered to the grid by the project (EG_y)

According to ACM0006 version 04, the net quantity of electricity generated (EG_y) should be continuously measured and the consistency of metered net electricity generation should be cross-checked with receipts from electricity sales (if available) and the quantity of fuels fired. According to the monitoring plan of registered PDD, the net electricity delivered to the grid is measured by the electricity meters installed at the project site. The project delivers electricity to the grid through a main transmission line and also imports electricity from the grid through a backup line which is designed for emergency use. EG_y is calculated as follows:

$$EG_y = A - A' - B,$$

Where A is the electricity delivered by the project to the grid, which is measured by the meter installed at the main line.

A' is the electricity consumption by the project (the electricity imported through the main line by the project). The project does not import electricity through the main line during this monitoring period. All electricity consumed by the project is imported through the backup line. So A' is 0.

B is the electricity imported by the project through the backup line.

The meter on the main line (referred to as "Meter A" hereinafter) and the meter on the backup line (referred to as "Meter B" hereinafter) are read and recorded by designated operator from the power plant company every day. The daily readings are transcribed into Daily Reading Records (DRRs, /12/). Designated person from the grid company reads and records the meter on the main line on the 20th of every month and read the meter on the backup line on the 15th of every month. Monthly readings are transcribed into Monthly Reading Records (MRRs, /13/). Electricity Transaction Notes (ETNs) for the electricity delivered to the grid are issued by the grid company to the power plant company every month based on the MRRs and invoices are issued by the power plant company to the grid company based on the ETNs. Sales invoices for the electricity imported by the project are issued by the grid company to the power plant company. ETNs and invoices, serving as sales receipt (/14/), are used for double check. All the MRRs and sales receipts covering this monitoring period have been checked by the verification team. DRRs were randomly checked as cross references. The electricity generation of the project is also cross-checked with the quantity of biomass fired. In Annex 1 of the Monitoring Report version 2.0, an energy balance form is provided. The efficiency of the electricity generation was 27% during this monitoring period. Based on our local expertise, we confirm it is a reasonable efficiency.

In version 1.0 of the Monitoring Report, EG_y was calculated as $EG_y = E_s - E_i$, which is not in compliance with the registered PDD. The transaction balance date for August 2008 was reported as 20/08/2008, while the actual balance date was 19/08/2008. The reported value of the electricity delivered to the grid during the period from 21/12/2009 to 31/01/2009 and the electricity imported from the grid during the period from 15/12/2008 8:00 to 31/01/2009 24:00 was different from the verified value. CAR #1 was raised for requesting the PP to make corrections. In version 2.0 of the Monitoring Report, EG_y is calculated as $EG_y = A - A' - B$, in accordance with the registered PDD. The reporting period of August 2008 is corrected. The reason why the reported values of the electricity delivered and the electricity imported during the above mentioned periods are different from the verified values is explained by the PP. It is because the values of December 2008 were not reported in MR v1.0. In MR v2.0, the correct values are reported. The meter readings of Meter A and Meter B at 0:00 on 25/06/2008 and at 24:00 on 31/01/2009 were read and recorded by the grid company. The grid company issued an additional confirmation to the power plant company to confirm the meter readings at the above mentioned time. The MRRs of the electricity delivered to the grid and the electricity imported from the grid were verified by the verification team and sales receipts were used for double check. DRRs were used as a cross reference. The confirmation from the grid company was verified by the verification team. It is confirmed by the verification team that the reported values of the electricity delivered to the grid and the electricity imported from the grid by the project and the calculation of EG_y are correct in version 2.0 of the monitoring report. CAR #1 is closed out. The reported values in version 3.0 of the monitoring report are correct.

3.4.2 Quantity of biomass residue type k combusted in the project plant during the year y ($BF_{k,y}$)

According to the methodology, the quantity of biomass residue type k combusted in the project should be continuously measured onsite by using weight or volume meters, adjusted for the moisture content in order to determine the quantity of dry biomass, and shall be crosschecked with the quantity of electricity generated and any fuel purchase receipts. According to the PDD, the parameter should be measured by weigh bridges which should be calibrated annually according to national standard.

The assessment team checked through onsite visit that this parameter is measured by the weigh bridge installed at the power plant when the biomass is transported to the power plant. The trucks are weighed when they enter the power plant and are weighed again after having unloaded the biomass. The weight of the biomass is the difference between the two weighed values and is recorded automatically by the computer at the weigh bridge house (/15/). Fuel purchase receipts of the biomass are issued to the biomass suppliers and the power plant company also keeps a copy of the purchase receipts. The monitoring result of the parameter has been crosschecked with an annual energy balance in Annex 1 of the Monitoring Report, and

SGS can confirm that the efficiency is within a reasonable range.

2 kinds of biomass were used during this monitoring period. They were cotton straw and maize stalk. In version 1.0 of the monitoring report, the total quantity of the 2 kinds of biomass was reported, without distinguishing the quantity of each kind of biomass. CAR #2 was raised for requesting the PP to report the quantity of biomass respectively for each kind of biomass. In version 2.0 of the Monitoring Report, the quantities of cotton straw and maize stalk are reported separately and the total values are also reported. The records of the biomass transported into the power plant during this monitoring period from 25/06/2008 to 31/01/2009 and the sales receipts of the transported biomass were checked and verified by the verification team and were found to be acceptable. It is confirmed that the reported values of $BF_{k,y}$ in version 2.0 of the monitoring report are correct. CAR #2 is closed out.

The quantities of each kind of biomass are reported both in dry matter and in fresh matter. The dry matter value of $BF_{k,y}$ is used for the calculation of $BE_{biomass,y}$ and $PE_{biomass,CH_4,y}$. To be conservative, the fresh matter value of $BF_{k,y}$ is used for the calculation of project emissions due to transportation of the biomass (PET_y). The reported values in version 3.0 of the monitoring report are correct.

3.4.3 Moisture content of the biomass residues

According to the methodology, the moisture content should be continuously measured onsite and mean values should be calculated at least annually. According to the PDD, the moisture should be measured each time of truck entering into the plant, and mean values will be calculated at least annually.

It was verified through the onsite visit that the assessment team can confirm that the moisture content is measured by moisture content measuring equipment when the biomasses are transported into the power plant. Three samples are analyzed at the same time and reported. The average of moisture content of these samples are used and recorded. The moisture content is recorded by the computer system along with the quantity of biomass for each truck of biomass. The mean value is calculated at least annually.

In version 1.0 of the Monitoring Report, the moisture content of the biomass residues was not reported. CAR #3 was raised for requesting the PP to report the moisture content of each kind of biomass used by the project during this monitoring period. In version 2.0 of the monitoring report, the moisture content of cotton straw and maize stalk are reported. The records of the biomass transported into the power plant during this monitoring period from 25/06/2008 to 31/01/2009 were checked and verified by the verification team. It is confirmed that the reported values of the moisture content of cotton straw and maize stalk are correct in version 2.0 of the monitoring report. CAR #3 is closed out. The reported values in version 3.0 of the monitoring report are correct.

3.4.4 Quantity of diesel combusted in the straw-fired boiler for start-up during the year y ($FF_{project,plant,d,y}$)

According to the methodology, fossil fuels co-fired in the project plant should be continuously measured by using weight or volume meters. But this do not include any other fuel consumption at the project site that is attributable to the project activity (e.g. for mechanical preparation of the biomass residues). According to the PDD, the quantity of diesel combusted in the straw-fired boiler start-up should be measured and crosschecked by an annual energy balance.

In the actual operation, the project does not need diesel oil for start up. The quantity of diesel oil combusted in the straw-fired boiler for start-up was 0 during this monitoring period. During the onsite visit, the verification team assessor checked the equipments, and confirmed that the project did not need diesel oil for startup.

3.4.5 Quantity of diesel combusted in the straw forklift during the year y ($FF_{project,site,d,y}$)

According to the methodology, the quantity of fossil fuel type i combusted at the project site for other purposes that are attributable to the project activity should be continuously measured by using weight or volume meters and crosschecked with an annual energy balance. This should not include fossil fuels co-fired in the project plant. According to the PDD, the quantity of diesel combusted in the straw forklift should be measured.

In the actual operation, all diesel combusted by the straw forklifts in the power plant are derived from an oil tank truck. The oil tank truck is weighed at the last day of every month by the weigh bridge at the power plant

(/16/). When new oil is added into the oil tank, the oil tank is weighed before and after the oil is added. The quantity of diesel oil combusted by the straw forklifts in the power plant in a certain month is equal to the quantity of diesel oil at the start of the month plus the purchased amount and then minus the quantity at the end of the month. It is cross-checked with an annual energy balance that is based on purchased quantities and stock changes.

In version 1.0 of the monitoring report, the value of $FF_{\text{project,plant,d,y}}$ was not reported and the reported values of $FF_{\text{project,site,d,y}}$ was in the unit of Litter. CAR #4 was raised for requesting the PP to report the value of $FF_{\text{project,plant,d,y}}$, though it was 0, and to correct the reported values of $FF_{\text{project,site,d,y}}$. In version 2.0 of the monitoring report, $FF_{\text{project,plant,d,y}}$ is reported as 0, and $FF_{\text{project,site,d,y}}$ is correctly reported. Because the oil tank was not weighed on 25/06/2008, the diesel oil consumption during the whole month of June 2008 is reported as the diesel oil consumption during the period from 25/06/2008 to 30/06/2008. CAR #4 is closed out. The reported values in version 3.0 of the monitoring report are correct.

3.4.6 The net calorie value of biomass type k consumed by the project (NCV_k)

According to the methodology, the net calorie value of biomass type k consumed by the project should be measured at reputed laboratories and according to relevant international standards, based on dry biomass, measured at least every six months, taking at least three samples for each measurement. The monitoring procedures of NCV_k in the PDD comply with the methodology.

In the actual operation, the net calorie value of biomass type k consumed by the project was measured once every 6 months by Pony Testing International Group Beijing Branch (/17/), which has reputed laboratories (/18/).

The data in the testing reports are used for emission reduction calculations. 3 samples are tested at the same time for each kind of biomass and the average value of NCV are reported in the testing report. 2 tests were done for each kind of biomass used by the plant, on 20/06/2008 and 20/12/2008 respectively, covering this monitoring period. The testing reports were verified by the verification team. It was found the reported value of the $NCVs$ in version 1.0 of the monitoring report did not comply with the testing reports. CAR #5 was raised for requesting the PP to explain the reason and make corrections. The PP explained that the average value of the NCV and GCV in the reports was used in MR v1.0 for each kind of biomass. Because $NCVs$ of the biomasses are used for the calculation of project emission as per the registered PDD and methodology applied, it is conservative to use the maximum value of the $NCVs$ in the 2 reports. In version 2.0 of the monitoring report, maximum value of the $NCVs$ in the 2 reports dated 20/06/2008 and 20/12/2008 for each kind of biomass are reported. CAR #5 is closed out. The reported values in version 3.0 of the monitoring report are correct.

3.4.7 On-site electricity consumption attribute to the project activity ($EC_{PJ,y}$)

According to the methodology, the on-site electricity consumption attributable to the project activity during the year should be measured continuously by using electricity meters and crosschecked with electricity purchase receipts. According to the PDD, $EC_{PJ,y}$ should be calculated conservatively as the product of the weight of straw smashed (in tons) and the electricity consumption factor.

The on-site electricity consumption attributable to the project activity is the electricity consumption for crushing the biomass at the biomass collection sites, which are located outside the power plant. The electricity consumption is measured by electricity meters installed at the collection sites, in accordance with the methodology applied. To be conservative, the registered PDD provides a conservative calculation method of estimating the electricity consumption due to crushing the biomass.

This data is calculated as the product of the weight of straw smashed (in tons) and the electricity consumption factor (kWh/ton). The electricity factor can be calculated as follows:

- 1) Collecting all the nameplate power (in kW) and capacity (t/h) of every straw crackers,
- 2) Calculating the electricity factor corresponding to each cracker which equals to power/capacity (in kWh/t),
- 3) Using the largest number as a conservative electricity factor for the calculation.

3 kinds of crackers were used during this monitoring period. Tests were carried out by the manufacturers of the crackers (/19/). The largest electricity consumption factor per tonne of biomass is selected for the calculation of $EC_{PJ,y}$. $EC_{PJ,y}$ is calculated using the electricity consumption factor multiplying the total biomass

combusted during this monitoring period (in fresh matter).

In version 1.0 of the monitoring report, the reported values of $EC_{PJ,y}$ were based on the monitoring result of the electricity meters installed at the collection sites. CAR #6 is raised for requesting the PP to calculate $EC_{PJ,y}$ as per the registered PDD. In Monitoring Report Version 2.0, the reported values of $EC_{PJ,y}$ is correctly calculated as per the registered PDD. The testing reports of the crushing machines were verified by the verification team during the onsite visit. The electricity consumption factor was selected as the most conservative one. CAR #6 is closed out. The reported values in version 3.0 of the monitoring report are correct.

3.4.8 Average round trip distance between biomass fuel supply sites and the project site (AVD_y)

According to the methodology, the average round trip distance (from and to) between biomass fuel supply sites and the project site should be recorded by the PP, and check consistency of distance records provided by the truckers by comparing recorded distances with other information from other sources (e.g. maps). The procedures for monitoring AVD_y in the PDD comply with the methodology.

The project has 5 major biomass collection sites out of the power plant. Most of the biomasses are transported from the farms to the nearest collection site first. And then the biomasses are transported from the major collection sites into the power plant. The distances between the power plant and the major collection sites are measured by odographs on the trucks. And the distance between the biomass suppliers and the major collection site was measured by the biomass suppliers using the odograph installed in their trucks when they transported biomass to the collection site. Each supplier had a corresponding transport distance, and the distance was provided by the biomass suppliers when they transport biomass to the collection sites at the first time. The distances were collected and recorded in a database system by a department of the Power plant which is responsible for the straw collection and transportation. For biomass transported from the collection sites to the power plant, the distance of fuel supply site and the project site is the distance between the project power plant and the collection site, plus the collection radius of the collection site, which equals to the average distance of all the biomass suppliers to the collection site. This parameter is cross checked with maps by the verification team.

Single trip distance was used, instead of round trip, to calculate the AVD_y in monitoring report version 1.0. And the distance of transporting the biomass to the major collection sites were not accounted. CAR #7 was raised requesting the PP to make corrections. In monitoring report version 2.0, the reported value of AVD_y is correct. CAR #7 is closed out. The reported values in version 3.0 of the monitoring report are correct.

3.4.9 Average truck load of the trucks used for transportation of biomass (TL_y)

This parameter is measured by the weigh bridge installed at the power plant when the biomass is transported to the power plant. The monitoring equipment and procedures are the same as that for the monitoring of BFk_y , as the quantity of biomass transported into the power plant by each truck is monitored and recorded in the database system. The average of the quantity of biomass transported into the power plant by each truck during the monitoring period is the average truck load of the trucks used for transportation of biomass.

The calculation of TL_y is carried out within the database system. The reported values in version 3.0 of the monitoring report are correct.

3.5 Accuracy of Equipment

According to the monitoring plan of the registered PDD, the monitoring equipments for EG_y should comply with Chinese national standard DL/T 448-2000 and have an accuracy class of 0.5S. The accuracy class of the meters actually installed for monitoring EG_y is 0.2S, complying with the Chinese national standard DL/T 448-2000 and is more accurate than the PDD requirement. The calibration frequency for the electricity meters is once every year in the PDD. According to the monitoring plan, the weigh bridge and the moisture content meters should also be calibrated annually.

In version 1.0 of the monitoring report, the installation information and calibration information of the monitoring equipments were not reported. CL #9 was raised for requesting the PP to provide the installation and calibration information of the monitoring equipments in the monitoring report. In version 2.0 of the monitoring report, the installation information and calibration information are provided.

Monitoring Equipment	Parameter(s) Monitored	Serial Number	Accuracy	Calibration Date	Valid Until
Electricity Meter A	The electricity delivered to the grid (A)	36065966	0.2S	10/12/2007	09/12/2008
				25/11/2008	24/11/2009
Electricity Meter B	The electricity imported from the grid through the backup line (B)	36065969	0.2S	10/12/2007	09/12/2008
				25/11/2008	24/11/2009
Weigh bridge	BF _{k,y}	06288	III	12/03/2008	11/09/2008
	FF _{project site,d,y}			29/07/2008	28/01/2009
	TL _y			29/01/2009	28/07/2009
Moisture content meters	Moisture content of the biomass residues	1 & 2	0.2%	09/12/2007	08/12/2008
				08/12/2008	07/12/2009

The electricity meters were calibrated by Hebei Electric Power Research Institute, which is an accredited calibrating entity authorised by the Quality and Technology Supervision Bureau of Hebei Province. The weigh bridge was calibrated by Quality and Technology Supervision and Inspection Institution of Wei County, which is authorised by the Quality and Supervision Bureau of Hebei Province. The moisture content meters were calibrated by Metrological and Testing Institution of Handan City, which is an accredited calibrating entity authorised by the Quality and Technology Supervision Bureau of Hebei Province. The calibration certificates of the monitoring equipments and the accreditation certificates of the calibrating entities were verified by the verification team. It is confirmed that the calibration information reported in version 2.0 of the monitoring report is correct and all the monitoring equipments involved in the monitoring have been calibrated as per the monitoring plan. CL #9 is closed out. The equipment and calibration information is reported in version 3.0 of the monitoring report.

3.6 Accuracy of Emission Reduction Calculations

The calculation of Emission Reductions is in accordance with ACM0006 version 04 and the registered PDD. Because several parameters were not correctly reported in version 1.0 of the monitoring report, CAR #1, CAR #2, CAR #3, CAR #4, CAR #5, CAR #6, CAR #7 and CAR #8 were raised. The PP's responses to the 8 CARs are satisfactory and the CARs are closed out. The calculation of Emission Reductions is carried out by using the ER Spreadsheet. The ER Spreadsheet was checked and verified by the assessment team and was found to be correct. The calculation result of Emission Reductions reported in version 3.0 of the monitoring report is correct. The details of the reported and the verified values for all parameters are listed in section 4.

3.7 Quality of Evidence to Determine Emission Reductions

Critical parameters used for the determination of the Emission Reductions are discussed in section 3.4 above. All the data recorded is in compliance with the monitoring report.

3.8 Management System and Quality Assurance

Management system and quality assurance procedures have been stipulated in the CDM Development Manual and CDM Monitoring and Management Procedures and have been implemented during daily operation. Emergency plan is in place. The members of staff are well trained and qualified. These have been

verified during the on-site visit and document review. Therefore we can confirm that the management system of the CDM project is in place, with the responsibilities properly identified and in place, and that QA/QC procedures are implemented.

3.9 Data from External Sources

3.9.1 CH₄ emission factor for uncontrolled burning ($EF_{\text{burning,CH}_4,k,y} * NCV_k$)

There is no information more accurate than IPCC default value available for the PP. According to the IPCC default value provided in table 5 of ACM0006, the CH₄ emission factor of combustion of biomass in the power plant is 0.0027 tCH₄/t. When considering a conservativeness factor of 0.73, the CH₄ emission factor in the PDD is taken as 0.001971 tCH₄/t. This value is correctly applied in the Monitoring Report version 3.0.

3.9.2 CH₄ emission factor for controlled burning ($EF_{\text{CH}_4,BF}$)

There is no information more accurate than IPCC default value available for the PP. The IPCC default CH₄ emission factor of 30 kg/TJ from Table 3 of the methodology is used, with a conservativeness factor of 1.37. The CH₄ emission factor for controlled burning is correctly applied in the Monitoring Report version 3.0 as 0.0411 tCH₄/t.

3.9.3 Net calorie value of fossil fuel type i (NCV_i) (i=d for diesel)

According to ACM0006 version 04, the net calorific value of the fossil fuel type i should either be measured or from accurate and reliable local or national data where available. Where such data is not available, IPCC default values may be used. For this project, the only one type of fossil fuel used by the project is diesel. According to the registered PDD, the net calorific value of diesel (NCV_d) should be collected from the latest China Energy Statistical Yearbook. As this value will be a national specific value, the uncertainty is low. The monitoring plan complies with the monitoring methodology applied by the project. During this monitoring period, the value of NCV_d (0.042652 TJ/t) is derived from China Energy Statistical Yearbook 2008 (/31/), which is the latest China Energy Statistical Yearbook at the time of compiling the monitoring report. The appropriateness of the data is reviewed annually. The data source of China Energy Statistical Yearbook 2008 is appropriate for this monitoring period. The value is correctly applied in the monitoring report version 3.0.

3.9.4 GWP_{CH₄}: Global Warming Potential of CH₄

The IPCC default value of 21 tCO₂e/tCH₄ is correctly applied in the monitoring report version 3.0.

3.9.5 Emission factor of diesel used for straws transportation and on-site fuel use (EF_d)

The IPCC default value of 74.1 tCO₂/TJ is correctly applied in the monitoring report version 3.0.

3.9.6 Density of diesel used for straws transportation (Density_d)

The data from Chinese national standard GB/T19147-2003 is selected conservatively. The value of the density of diesel oil is 0.00086 t/L in the PDD and is correctly applied in the monitoring report version 3.0.

3.9.7 The diesel consumption per km for the full-load truck in L/km (DPK_y)

According to the registered PDD, the DPK of each typical type of truck which will be used for straws transportation should be tested and recorded annually. The average DPK will be used for emission reduction calculation. In case such value is not available, the nameplate DPK is an alternative solution in a conservative estimation, viz. two times of the consumption of the nameplate DPK.

In the actual operation of the project, the typical type of truck that transport biomass to the project is the 120 Horsepower Jiefang light truck. The assessment team has checked the records of biomass transported to the project site, and can confirm that the 120 Horsepower light truck was the mostly used truck, consisting 60%-70% of all the trucks that transporting biomass to the project site. And the power of the 120 Horsepower light truck is the largest among all the trucks transporting biomass to the project site. The transportation capacity and fuel consumption per kilometre of the 120 Horsepower light truck are the largest. The fuel consumption

per kilometre of the 120 Horsepower Jiefang light truck was tested by the manufacturer, at the average load (about 8 tonne). The testing result was 0.29 L/km. To be conservative the PP multiplied the value with 2 and applied 0.58 L/km in the monitoring report. The monitoring of DPK is in accordance with the monitoring plan and the value applied in the monitoring report is conservative. The conservative value of 0.58 L/km is applied in the monitoring report version 3.0.

3.9.8 Average CO2 emission factor for the trucks during the year y ($EF_{km,CO2,y}$)

$EF_{km,CO2,y}$ is calculated as $EF_{km,CO2,y} = DPK_d * Density_d * NCV_d * EF_d$. 0.001577 tCO2/km is applied in the monitoring report version 3.0. It is more conservative than the IPCC default value for American heavy trucks (0.001011 tCO2/km).

3.9.9 Emission factor of the electricity displaced ($EF_{electricity,y}$)

The emission factor of the electricity displaced is calculated ex ante and fixed for the first crediting period. The value in the PDD, 1.03025 tCO2e/MWh is correctly applied in the monitoring report version 3.0.

3.9.10 Quantity of available biomass residues of type k in the region

2 kinds of biomass residues were used by the project during this monitoring period. All the biomass residues were collected within Wei County.

The quantity of available biomass residues of type k in the region is from official data of the local government. The quantity of available biomass residues in the region are from the Biomass Resource Investigation Report of Wei County issued by the Agricultural Bureau of Wei County and the Statistic Bureau of Wei County 2008.

In version 1.0 of the monitoring report, the reported value of available cotton straw in the region is different from the verified value. CAR #8 was raised requesting the PP to make corrections. According to the PP's response, the investigation result of 2007 was used in Monitoring Report version 1.0. In version 2.0 of the monitoring report, the investigation result of 2008 is reported and the reported values of available biomass are correct. CAR #8 is closed out. The reported values in version 3.0 of the monitoring report are correct.

3.9.11 Quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region

2 kinds of biomass residues were used by the project during this monitoring period. All the biomass residues were collected within Wei County.

The quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region is from official data of the local government. The quantity of available biomass residues in the region are from the Biomass Resource Investigation Report of Wei County 2008 issued by the Agricultural Bureau of Wei County and the Statistic Bureau of Wei County (/21/).

The quantity of available cotton straw and maize stalk and the quantity of cotton straw and maize stalk that are utilized in Wei County are as follows:

Biomass type	Cotton Straw	Maize Stalk
Total biomass generation in the region (10^4t)	38.2833	2.5
Available biomass (10^4t)	32.5408	2.125
Biomass used excluding project (10^4t)	4.5	0.05
Biomass used by the project (10^4t)	18.3789	0.4334
Total used biomass including project (10^4t)	22.8789	0.4834
Available biomass/total used biomass	167.33%	517.17%
Abundant surplus?(more than 25%?)	yes	yes

The Biomass Resource Investigation Report of Wei County 2008 issued by the Agricultural Bureau of Wei County and the Statistic Bureau of Wei County was checked and verified by the SGS assessment team and

was found to be acceptable. It is confirmed that the reported values of the quantity of available cotton straw and maize stalk and the quantity of cotton straw and maize stalk that are utilized in Wei County are in accordance with the Investigation Report and it has demonstrated an abundant surplus of biomass in the region for each kind of biomass residues utilised by the project and the leakage is 0.

4. Calculation of Emission Reductions

Parameter	Reported Value in MR ver 1.0	Verified Value
EG _y	82,826.36 MWh	96,877.28 MWh
Σ BF _{k,y,dry matter}	Not Reported.	122,681.31 t
Σ BF _{k,y,fresh matter}	Not Reported.	145,857.80 t
BF _{cotton straw, y, dry matter}	128194.40 t	119,776.70 t
BF _{maize stalk, y, dry matter}	2978.54 t	2904.61 t
Moisture content of cotton straw	Not Reported.	15.82%
Moisture content of maize stalk	Not Reported.	18.67%
FF _{project,plant,d,y}	Not Reported.	0 t
FF _{project,site,d,y}	88223.1 L	74.88 t
NCV _k (cotton straw)	0.012825 TJ/t	0.0121 TJ/t
NCV _k (maize stalk)	0.010875 TJ/t	0.0103 TJ/t
EG _{PJ,y}	542.8 MWh	1,239.8 MWh
AVD _y	17 km	58 km
TL _y	8 t	8 t
PET _y	675.23	1,668 tCO ₂ e
PEFF _y	239.79	237 tCO ₂ e
PE _{EC,y}	542.80	1,278 tCO ₂ e
PE _{biomass,CH₄,y}	Not reported.	61 tCH ₄
PE _y (tCO ₂ e)	3140.12	4,464 tCO ₂ e
ER _{electricity,y}	85,331.85 tCO ₂ e	99,807 tCO ₂ e
BE _{biomass,y}	5429.38 tCO ₂ e	5,077 tCO ₂ e
L _y	0 tCO ₂ e	0 tCO ₂ e
ER _y	87,621.11 tCO ₂ e	100,420 tCO ₂ e

According to the registered PDD,

$$PET_y = \Sigma BF_{k,y,fresh\ matter} / TL_y * AVD_y * EF_{km,CO_2,y} = 145,857.80\ t / 8\ t * 58\ km * 0.001577\ tCO_2e/km = 1,668\ tCO_2e.$$

$$PEFF_y = (FF_{project,plant,d,y} + FF_{project,site,d,y}) * NCV_d * EF_d = (0\ t + 74.88\ t) * 0.042652\ TJ/t * 74.1\ tCO_2e/TJ = 237\ tCO_2e.$$

$$PE_{EC,y} = EC_{PJ,y} * EF_{electricity,y} = 1,239.8\ MWh * 1.03025\ tCO_2e/MWh = 1,278\ tCO_2e.$$

$$PE_{biomass,CH_4,y} = \Sigma BF_{k,y,dry\ matter} * NCV_k * EF_{CH_4,BF} = (119,776.70\ t * 0.0121\ TJ/t + 2904.61\ t * 0.0103\ TJ/t) * 0.0411\ tCH_4/t = 61\ tCH_4.$$

$$PE_y = PET_y + PEFF_y + PE_{EC,y} + GWP_{CH_4} * PE_{biomass,y} = 1,668\ tCO_2e + 237\ tCO_2e + 1,278\ tCO_2e + 61\ tCH_4 * 21\ tCO_2e/tCH_4 = 4,464\ tCO_2e.$$

$$ER_{\text{electricity},y} = EG_y * EF_{\text{electricity},y} = 96,877.28 \text{ MWh} * 1.03025 \text{ tCO}_2\text{e/MWh} = 99,807 \text{ tCO}_2\text{e}.$$

$$BE_{\text{biomass},y} = GWP_{\text{CH}_4} * \sum BF_{k,y,\text{dry matter}} * NCV_k * EF_{\text{burning,CH}_4,k,y} = 21 \text{ tCO}_2\text{e/tCH}_4 * 122,681.31 \text{ t} * 0.001971 \text{ tCH}_4/\text{t} = 5,077 \text{ tCO}_2\text{e}.$$

According to the registered PDD, Emission Reductions (ER_y) are calculated as follows:

$$\begin{aligned} ER_y &= ER_{\text{electricity},y} + BE_{\text{biomass},y} - PE_y - L_y \\ &= 99,807 \text{ tCO}_2\text{e} + 5,077 \text{ tCO}_2\text{e} - 4,464 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e} \\ &= 100,420 \text{ tCO}_2\text{e}. \end{aligned}$$

5. Recommendations for Changes in the Monitoring Plan

No recommendation for changes in the monitoring plan was made during this verification.

6. Overview of Results

Assessment Against the Provisions of Decision 17/CP.7:

Is the project documentation in accordance with the requirements of the registered PDD and relevant provision of decision 17/CP.7, EB decisions and guidance and the COP/MOP?

Yes. The results of the compliance assessment are recorded in the verification checklist which is used as an internal report only.

Have on-site inspections been performed that may comprise, inter alia, a review of performance records, interviews with project participants and local stakeholders, collection of measurements, observations of established practices and testing of the accuracy of monitoring equipment?

Yes. A site visit was performed including interviews, collection of data, audit of the implementation of procedures, checks of calibration certificates and data, inter alia.

The results of the site visit are recorded in the verification checklist which is used as an internal report only.

The evidences have been checked and collected. The revised monitoring report is attached with this verification report.

Has data from additional sources been used? If yes, please detail the source and significance.

Yes. The following data are from external sources:

$EF_{\text{electricity},y}$ Baseline emission factor, 1.03025 tCO₂e/MWh, was determined using external sources at validation stage. Baseline emission factor is ex-ante determined and fixed for the first crediting period;

*$EF_{\text{burning,CH}_4,k,y} * NCV_k$, 0.001971 tCH₄/t, IPCC and ACM0006, version 04;*

$EF_{\text{CH}_4,BF}$, 0.0411 tCH₄/t, IPCC and ACM0006, version 04;

NCV_d , 0.042652 TJ/t, China Energy Statistical Yearbook 2008;

GWP_{CH_4} , 21 tCO₂e/tCH₄, IPCC;

$EF_{d,}$, 74.1 tCO₂/TJ, IPCC;

$Density_d$, Chinese national standard GB/T19147-2003;

DPK_y , 0.58L/km, manufacturer;

*$EF_{km,CO_2,y}$ is calculated as $EF_{km,CO_2,y} = DPK_d * Density_d * NCV_d * EF_d$. 0.001577 tCO₂/km is applied;*

Quantity of available biomass residues of type k in the region and the quantity of biomass residues of type k that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region are from official data of the local government.

Please review the monitoring results and verify that the monitoring methodologies for the estimation of reductions in anthropogenic emissions by sources have been applied correctly and their documentation is complete and transparent.

Yes. The monitoring methodology has been correctly applied and the monitoring report and supporting references are complete and transparent.

Have any recommendations for changes to the monitoring methodology for any future crediting period been issued to the project participant?

No.

Determine the reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity, based on the data and information using calculation procedures consistent with those contained in the registered project design document and the monitoring plan.

*The data used in anthropogenic emission reduction calculation is consistent with those contained in the registered PDD and monitoring plan. The emission reduction was 79,098 tCO₂e (=130,638/365*221) for the period from 25/06/2008 to 31/01/2009 as per the estimation made in the registered PDD. For the explanation on the difference between the verified value and the estimate in the registered PDD, please refer to the closing of CL #10.*

Identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project design document. Project participants shall address the concerns and supply relevant additional information.

No such non conformity of the actual project activity and its operation with the registered project design document has been observed.

Post monitoring report on UNFCCC website

Yes, the monitoring report is available at ref. 1546 on UNFCCC website

<http://cdm.unfccc.int/Projects/DB/TUEV-SUED1200569734.96>

7. Verification and Certification Statement

SGS United Kingdom Ltd has been contracted by Climate Change Capital Limited to perform the verification of the emission reductions reported for the CDM project Straw generation project in Wei county Hebei province, P.R. China (UNFCCC Ref. 1546) in the period from 25/06/2008 to 31/01/2009.

The verification is based on the validated and registered project design document and the monitoring report for this project. Verification is performed in accordance with section I of Decision 3/CMP.1, and relevant decisions of the CDM EB and CoP/MoP. The scope of this engagement covers the verification and certification of greenhouse gas emission reductions generated by the above project during the above mentioned period, as reported in the Monitoring Report Version 3.0 dated 01/06/2010.

The management of the Climate Change Capital Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Monitoring Report Version 3.0 dated 01/06/2010. Calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Straw generation project in Wei county Hebei province, P.R. China. The development and maintenance of records and reporting procedures are in accordance with the monitoring report.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period from 25/06/2008 to 31/01/2009 based on the reported emission reductions in the Monitoring Report Version 3.0 dated 01/06/2010 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, SGS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

SGS confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have seen and evaluated, we confirm the following:

Project Title:	Straw generation project in Wei county Hebei province, P.R. China
UNFCCC Reference Number:	1546
Registered PDD and Approved Used for Verification:	Registered Project Design Document, version 3.4, dated 03/12/2007.
Methodology Used for Verification:	ACM0006: Consolidated methodology for grid-connected electricity generation from biomass residues, version 04, dated 02/11/2006.
Applicable Period:	25/06/2008 - 31/01/2009
Total GHG Emission Reductions Verified:	100,420 tCO ₂ e

Signed on behalf of the Verification Body by Authorized Signatory

Signature:



Name: Siddharth Yadav

Date: 8th June 2010

8. Document References

- /1/ Registered Project Design Document, version 3.4, dated 03/12/2007.
- /2/ ACM0006: Consolidated methodology for grid-connected electricity generation from biomass residues, version 04, dated 02/11/2006.
- /3/ Monitoring Report:
Version 1.0, dated 05/03/2009;
Version 2.0, dated 02/09/2009;
Version 3.0, dated 01/06/2010.
- /4/ Validation report of Straw generation project in Wei county Hebei province, P.R. China, issued by TUV-SUD, revision no. 3, dated 16/06/2008.
- /5/ Project registration information on the UNFCCC website: <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1200569734.96/view>
- /6/ Calibration certificates of Meter A and Meter B, issued by Hebei Electric Power Research Institute, dated 10/12/2007 and 25/11/2008. .
- /7/ Calibration certificates of the weigh bridge, issued by Quality and Technology Supervision and Inspection Institution of Wei County, dated 12/03/2008, 29/07/2008 and 29/01/2009 respectively.
- /8/ Calibration certificates of the moisture content meters, issued by Metrological and Testing Institution of Handan City, dated 09/12/2007 and 08/12/2008 respectively.
- /9/ Accreditation certificate of Hebei Electric Power Research Institute, issued by Quality and Technology Supervision Bureau of Hebei Province, dated 30/11/2007.
- /10/ Accreditation certificate of Quality and Technology Supervision and Inspection Institution of Wei County, issued by Quality and Technology Supervision Bureau of Hebei Province, dated 01/11/2004.
- /11/ Accreditation certificate of Metrological and Testing Institution of Handan City, issued by Quality and Technology Supervision Bureau of Hebei Province, dated 01/01/2003 and 27/05/2008..
- /12/ Daily Reading Records of Meter A and Meter B covering from 25/06/2008 to 31/01/2009.
- /13/ Monthly Reading Records of Meter A and Meter B covering the monitoring period from 25/06/2008 to 31/01/2009.
- /14/ Sales receipts of the electricity delivered to the grid and imported from the grid, including ETNs and invoices, covering the monitoring period from 25/06/2008 to 31/01/2009.
- /15/ Records of biomass transported into the power plant, covering the monitoring period from 25/06/2008 to 31/01/2009.
- /16/ Stock of Diesel Oil and Oil Addition Records, covering the monitoring period from 25/06/2008 to 31/01/2009.
- /17/ NCV Testing Report of Cotton Straw and Maize Stalk, issued by Pony Testing International Group Beijing Branch, dated 20/06/2008 and 20/12/2008.
- /18/ Accreditation Certificate of Pony Testing International Group Beijing Branch, issued by Quality and Technology Supervision Bureau of Beijing City, dated 10/10/2007.
- /19/ Testing result of the electricity consumption per tonne of biomass for the crushing machines, issued by the manufacturers.
- /20/ The diesel oil consumption per km when full-loaded of Yiqi Jiefang, issued by the manufacturer.
- /21/ Biomass Resource Investigation Report of Wei County 2008, issued by the Agricultural Bureau of Wei County and the Statistic Bureau of Wei County.
- /22/ CDM Manual of the power plant.
- /23/ QA/QC Procedures of the power plant.
- /24/ Emergency Plan of the power plant.
- /25/ Staff Training Records of the power plant.
- /26/ Staff Qualification Certificate of the power plant.
- /27/ Power Purchase Agreement between the grid company and the project company, dated 01/07/2008.
- /28/ ER Spreadsheet dated 02/09/2009.
- /29/ Validation and Verification Manual, version 01.1, dated 04/12/2009.
- /30/ Revised IRR Calculation Spreadsheet.
- /31/ China Energy Statistical Yearbook 2008

9. Findings Overview

Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	8	2	0

Date:	10/04/2009	Raised by:	Simon Zhao		
Type:	CAR	Number:	CAR #1	Reference:	Section 3 of AU4
Lead Assessor Comment:				Date: 10/04/2009	
<p>As to the reporting of parameter EG_y, the period “from 7/21/08 to 8/20/08” should be “from 7/21/08 to 8/19/08” and the period “from 8/21/08 to 9/20/08” should be “from “8/20/08 to 9/20/08”. It is recommended to use the format DD/MM/YYYY.</p> <p>As per the registered PDD, EG_y is calculated as $EG_y = A - A' - B$. Please report the values of A, A', and B, instead of Es and Ei.</p> <p>The reported value of EG_y for the period from 12/21/08 to 1/31/09 is different from verified value. Please correct.</p>					
Project Participant Response:				Date: 02/09/2009	
<p>The generation settlement is on 20th of every month, while in August 2008 it was happened on 19th instead of 20th as normal, but the accuracy of monitoring is not affected.</p> <p>The date in August 2008 and the format has been changed accordingly in updated monitoring report;</p> <p>A is the electricity delivered to the grid by the project, and monitored by main meter, located in the project site; A' is the electricity consumed by the project through the main line and also monitored through the same main meter; B is the electricity consumed by the project, purchased from the grid through the backup line, and monitored by the meter installed on the backup line located in the project site. But in this project all electricity are purchased from the backup line and no electricity from the grid is transmitted to the project through the main line, then A' equals zero.</p> <p>The electricity generation and consumption from 21/12/2008 to 20/01/2009 was missed in version 1.0 of the monitoring report, which is the reason why the reported value of EG_y from 21/12/2008 to 31/01/2009 is different from verified value. It has been corrected in updated monitoring report. The sales receipts are used for cross-check.</p>					
Documentation Provided as Evidence by Project Participant:					
<p>Monthly reading records for exported electricity and imported electricity covering this monitoring period from 25/06/2008 to 31/01/2009;</p> <p>Daily reading records for exported electricity and imported electricity covering this monitoring period from 25/06/2008 to 31/01/2009;</p>					

Sales receipts for exported electricity and imported electricity covering this monitoring period from 25/06/2008 to 31/01/2009;	
Monitoring Report Version 2.0, dated 02/09/2009;	
ER spreadsheet, dated 02/09/2009;	
Information Verified by Lead Assessor:	
Monthly reading records for exported electricity and imported electricity covering this monitoring period from 25/06/2008 to 31/01/2009;	
Daily reading records for exported electricity and imported electricity covering this monitoring period from 25/06/2008 to 31/01/2009;	
Sales receipts for exported electricity and imported electricity covering this monitoring period from 25/06/2008 to 31/01/2009;	
Monitoring Report Version 2.0, dated 02/09/2009;	
ER spreadsheet, dated 02/09/2009.	
Reasoning for not Acceptance or Acceptance and Close Out:	
The reporting period has been corrected in MR ver.2.0. EGy is calculated as per the registered PDD as $EGy = A - A' - B$. The reported values of exported and imported electricity in MR v2.0 are correct. CAR #1 is closed out.	
Acceptance and Close out by Lead Assessor:	Date: 15/10/2009 [Simon Zhao Xinguang]

Date:	10/04/2009	Raised by:	Simon Zhao		
Type:	CAR	Number:	CAR #2	Reference:	Section 3 of AU4
Lead Assessor Comment:				Date: 10/04/2009	
BF _{k,y} should be reported for each kind of biomass residues used by the project. The verified value of total BF _{k,y} is different from that reported in MR v1.0.					
Project Participant Response:				Date: 02/09/2009	
The biomass residue includes cotton straw and maize stalk. The types, moisture content and weight are recorded when purchasing.					
The amount of biomass residue (BF _{k,y}) is split into cotton straw and maize stalk in updated monitoring report.					
The sales receipts of the biomass residues are used for cross-check.					
Two changes made the difference of BF _{k,y} in MR ver1.0 and ver2.0:					
1) The biomass residue in whole June was used in MR ver1.0, while the residue from 25th to 30th June was used in MR ver2.0, but the later is more accurate;					
2) The average moisture of biomass residue per month was used in MR ver1.0, while the average moisture from June 2008 to Jan 2009 was used in MR ver2.0; the later is more consistent with the registered PDD and applied methodology.					
Documentation Provided as Evidence by Project Participant:					
The daily record of biomass residue types, moisture content and weigh covering this period from 25/06/2008					

<p>to 31/01/2009;</p> <p>The sales receipts of biomass covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring report version 2.0, dated 02/09/2009;</p> <p>ER spreadsheet, dated 02/09/2009.</p>	
<p>Information Verified by Lead Assessor:</p> <p>The daily record of biomass residue types, moisture content and weigh covering this period from 25/06/2008 to 31/01/2009;</p> <p>The sales receipts of biomass covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring report version 2.0, dated 02/09/2009;</p> <p>ER spreadsheet, dated 02/09/2009.</p>	
<p>Reasoning for not Acceptance or Acceptance and Close Out:</p> <p>Cotton straw and maize stalk were used during this monitoring period. The weight and moisture content of each kind of biomass are reported respectively in MR v2.0. The reported values of $BF_{k,y}$ are correct. CAR #2 is closed out.</p>	
<p>Acceptance and Close out by Lead Assessor:</p>	<p>Date: 15/10/2009 [Simon Zhao Xinguang]</p>

Date:	10/04/2009		Raised by:	Simon Zhao	
Type:	CAR	Number:	CAR #3	Reference:	Section 3 of AU4
Lead Assessor Comment:				Date: 10/04/2009	
The monitoring result of moisture content of each biomass residue type k is not reported.					
Project Participant Response:				Date: 02/09/2009	
<p>The biomass residue includes cotton straw and maize stalk. According to the methodology and registered PDD, the moisture content is measured and recorded each time the truck entered the plant, by the moisture measuring meter (HTM2);</p> <p>The moisture content of the biomass residue is included in MR ver2.0;</p> <p>The sales receipts of biomass residue are used for cross-check.</p>					
Documentation Provided as Evidence by Project Participant:					
<p>The daily record of biomass residue types, moisture content and weight covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p> <p>ER spreadsheet, dated 02/09/2009.</p>					
Information Verified by Lead Assessor:					
<p>The daily record of biomass residue types, moisture content and weight covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p> <p>ER spreadsheet, dated 02/09/2009.</p>					

Reasoning for not Acceptance or Acceptance and Close Out:	
The average values of moisture content of cotton straw and maize stalk during this monitoring period are reported respectively. The reported values in MR v2.0 are verified to be correct. CAR #3 is closed out.	
Acceptance and Close out by Lead Assessor:	Date: 15/10/2009 [Simon Zhao Xinguang]

Date:	10/04/2009	Raised by:	Simon Zhao		
Type:	CAR	Number:	CAR #4	Reference:	Section 3 of AU4
Lead Assessor Comment:				Date: 10/04/2009	
According to the registered PDD, $FF_{\text{project,plant,d,y}}$ and $FF_{\text{project,site,d,y}}$ should be monitored. Please report the monitoring results of them respectively.					
The reported values of diesel oil use are different from verified values. Please correct.					
Project Participant Response:				Date: 02/09/2009	
$FF_{\text{project,plant,d,y}}$ (Quantity of diesel combusted in the straw-fired boiler start-up) is zero, because only biomass residue is combusted in the straw-fired boiler start-up. The verifier had verified it during on-site visit.					
$FF_{\text{project,site,d,y}}$ (Quantity of diesel combusted in the straw forklift) is recorded as follows:					
The oil tank truck in the plant is weighed at the end of every month, and the difference between the value of last month will be recorded as the consumption of the diesel this month. When the plant purchase oil, the truck is weighed before and after adding oil. The diesel oil consumption during one month is calculated as: the weight at the beginning of this month minus the weight at the end of this month, then plus the oil purchased during the month. The diesel purchasing receipts are used for cross-check.					
One change made the difference of diesel oil consumption in MR1.0 and MR 2.0:					
We made a mistake in the calculation of diesel oil consumption in MR 1.0 as follows: the weight at the end of the month minus the weight at the beginning of the month, then plus the oil purchased during the month; while the correct calculation should be: the weight at the beginning of the month minus the weight at the ending of the month, then plus the oil purchased during the month; The mistake has been corrected in MR 2.0;					
Documentation Provided as Evidence by Project Participant:					
The monthly record of diesel oil and sales receipts covering this period from 25/06/2008 to 31/01/2009; Monitoring Report Version 2.0, dated 02/09/2009; ER spreadsheet, dated 02/09/2009.					
Information Verified by Lead Assessor:					
The monthly record of diesel oil and sales receipts covering this period from 25/06/2008 to 31/01/2009; Monitoring Report Version 2.0, dated 02/09/2009; ER spreadsheet, dated 02/09/2009.					
Reasoning for not Acceptance or Acceptance and Close Out:					
The reported values in Monitoring Report version 2.0 are correct. CAR #4 is closed out.					

Acceptance and Close out by Lead Assessor:	Date: 15/10/2009 [Simon Zhao Xinguang]
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Date:	10/04/2009	Raised by:	Simon Zhao		
Type:	CAR	Number:	CAR #5	Reference:	Section 3 of AU4
Lead Assessor Comment:			Date: 10/04/2009		
The reported values of NCV_k for cotton straw and maize stalk are different from the verified values. Please correct.					
Project Participant Response:			Date: 02/09/2009		
NCV was measured per six months by a reputed institute. Three samples were used per measurement, and the gross calorific value and the net calorific value were both measured. In the monitoring report version 2.0, the measurement of June and Dec 2008 were used. And the highest net calorific value is used for conservativeness, while in monitoring report version 1.0 the average of gross calorific value and net calorific value was used.					
Documentation Provided as Evidence by Project Participant:					
NCV measurement reports issued by Pony Testing International Group, dated 20/06/2008 and 20/12/2008; Monitoring Report Version 2.0, dated 02/09/2009; ER spreadsheet, dated 02/09/2009					
Information Verified by Lead Assessor:					
NCV measurement reports issued by Pony Testing International Group, date 20/06/2008 and 20/12/2008; Monitoring Report Version 2.0, dated 02/09/2009; ER spreadsheet, dated 02/09/2009					
Reasoning for not Acceptance or Acceptance and Close Out:					
The reported values in Monitoring Report version 2.0 are correct and conservative. CAR #5 is closed out.					
Acceptance and Close out by Lead Assessor:			Date: 15/10/2009 [Simon Zhao Xinguang]		

Date:	10/04/2009	Raised by:	Simon Zhao		
Type:	CAR	Number:	CAR #6	Reference:	Section 3 of AU4
Lead Assessor Comment:			Date: 10/04/2009		
The reported value of $EC_{PJ,y}$ is different from verified value. Please correct.					
Project Participant Response:			Date: 02/09/2009		
The value of $EC_{PJ,y}$ in monitoring report version 1.0, 542.8 MWh, is based on monitoring the meters for the electricity consumption of mechanical treatment for biomass residue, which is smaller than 1239.79MWh, the value from the calculation as described in the registered PDD, where $EC_{PJ,y}$ equals the power of the crashing machine multiply the amount of biomass residue. Then the higher value is used for conservative.					
Documentation Provided as Evidence by Project Participant:					
The performance reports of the crashing machine by the manufacturers;					

<p>The records for the amount of biomass residue consumption;</p> <p>The monthly records of electricity consumption of mechanical treatment for biomass residue ($EC_{PJ,y}$) covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p> <p>ER spreadsheet, dated 02/09/2009.</p>	
Information Verified by Lead Assessor:	
<p>The performance reports of the crashing machine by the manufacturers;</p> <p>The records for the amount of biomass residue consumption;</p> <p>The monthly records of electricity consumption of mechanical treatment for biomass residue ($EC_{PJ,y}$) covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p> <p>ER spreadsheet, dated 02/09/2009.</p>	
Reasoning for not Acceptance or Acceptance and Close Out:	
<p>In Monitoring Report version 2.0, the monitoring result of $EG_{PJ,y}$ is calculated as per the monitoring plan. And it is conservative. CAR #6 is closed out.</p>	
Acceptance and Close out by Lead Assessor:	Date: 15/10/2009 [Simon Zhao Xinguang]

Date:	10/04/2009	Raised by:	Simon Zhao		
Type:	CAR	Number:	CAR #7	Reference:	Section 3 of AU4
Lead Assessor Comment:				Date: 10/04/2009	
<p>AVD_y should be the average <u>round trip</u> distance between biomass fuel supply sites and the project site.</p> <p>The reported values of AVD_y are different from verified value. Please correct.</p>					
Project Participant Response:				Date: 02/09/2009	
<p>The transportation distance is recorded per truck;</p> <p>Single trip distance was used, instead of round trip, to calculate the AVD_y in monitoring report version 1.0, and the distance between the biomass residues production sites with the purchasing sites were not included. The mistakes have been corrected in the updated monitoring report.</p>					
Documentation Provided as Evidence by Project Participant:					
<p>The daily record for the trip distance of biomass residue per truck covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p> <p>ER spreadsheet, dated 02/09/2009</p>					
Information Verified by Lead Assessor:					
<p>The daily record for the trip distance of biomass residue per truck covering this period from 25/06/2008 to 31/01/2009;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p>					

ER spreadsheet, dated 02/09/2009	
Reasoning for not Acceptance or Acceptance and Close Out:	
In MR v2.0, the reported value of AVDy is correct. CAR #7 is closed out.	
Acceptance and Close out by Lead Assessor:	Date: 15/10/2009 [Simon Zhao Xinguang]

Date:	10/04/2009	Raised by:	Simon Zhao		
Type:	CAR	Number:	CAR #8	Reference:	Section 3 of AU4
Lead Assessor Comment:				Date: 10/04/2009	
The reported value of available cotton straw in the region is different from the verified value. Please correct.					
Project Participant Response:				Date: 02/09/2009	
In monitoring report version 1.0, we made a mistake and the value of available cotton straw in 2007 was used. The mistake has been corrected in monitoring version 2.0 and the value in 2008 was used. But both of the values represent that the available biomass residue is enough.					
Documentation Provided as Evidence by Project Participant:					
“Report of Resource Investigation in Wei county” 2008, covering the availability of the cotton straw and maize in 2008, issued by the statistical and agricultural departments of local government. Monitoring Report Version 2.0, dated 02/09/2009; ER spreadsheet, dated 02/09/2009					
Information Verified by Lead Assessor:					
“Report of Resource Investigation in Wei county” 2008, covering the availability of the cotton straw and maize in 2008, issued by the statistical and agricultural departments of local government. Monitoring Report Version 2.0, dated 02/09/2009; ER spreadsheet, dated 02/09/2009					
Reasoning for not Acceptance or Acceptance and Close Out:					
The reported value of available cotton straw in the region is correct in MR v2.0. It has demonstrated that there was a surplus of biomass in the region. CAR #8 is closed out.					
Acceptance and Close out by Lead Assessor:				Date: 15/10/2009 [Simon Zhao Xinguang]	

Date:	10/04/2009		Raised by:	Simon Zhao	
Type:	CL	Number:	CL #9	Reference:	Section 3 of AU4
Lead Assessor Comment:				Date: 10/04/2009	
Please clarify how the monitoring equipments for each parameter were calibrated as per the PDD. Please add a table in the monitoring report, providing detailed information of the monitoring equipments and calibrations, including what parameter is monitored, the location of the monitoring equipment, the accuracy (class), the calibration frequency, and the dates of calibrations.					

Project Participant Response:	Date: 02/09/2009
All the monitoring equipments for each parameter were calibrated as per the PDD, and the detailed information has been added into monitoring report version 2.0; and all the calibration reports etc have been provided to DOE and verified in site visit.	
Documentation Provided as Evidence by Project Participant:	
<p>All the related calibration reports issued by the certificated third party and the certificates of the third party covering this period from 25/06/2008 to 31/01/2009;</p> <p>Calibration reports for main meter on 11/12/2006, 10/12/2007, and 25/11/2008;</p> <p>Calibration reports for emergency line meter on 11/12/2006, 10/12/2007, and 25/11/2008;</p> <p>Calibration reports for weigh bridge on 10/12/2006, 29/03/2007, 28/09/2007, 12/03/2008, 29/07/2008, 29/01/2009;</p> <p>Calibration reports for NO.1 moisture measurement meter on 10/12/2006, 09/12/2007, 08/12/2008;</p> <p>Calibration reports for NO.2 moisture measurement meter on 10/12/2006, 09/12/2007, 08/12/2008;</p> <p>Accreditation certificates of the calibrator: (Ji) Faji (2007) D030; (Ji) Faji (2006) D030; (Ji) Faji (2004) F00917; (Ji) Faji (2003) F001; (Ji) Faji (2008) F001;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009</p>	
Information Verified by Lead Assessor:	
<p>Calibration reports for main meter on 11/12/2006, 10/12/2007, and 25/11/2008;</p> <p>Calibration reports for emergency line meter on 11/12/2006, 10/12/2007, and 25/11/2008;</p> <p>Calibration reports for weigh bridge on 10/12/2006, 29/03/2007, 28/09/2007, 12/03/2008, 29/07/2008, 29/01/2009;</p> <p>Calibration reports for NO.1 moisture measurement meter on 10/12/2006, 09/12/2007, 08/12/2008;</p> <p>Calibration reports for NO.2 moisture measurement meter on 10/12/2006, 09/12/2007, 08/12/2008;</p> <p>Accreditation certificates of the calibrator: (Ji) Faji (2007) D030; (Ji) Faji (2006) D030; (Ji) Faji (2004) F00917; (Ji) Faji (2003) F001; (Ji) Faji (2008) F001;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p>	
Reasoning for not Acceptance or Acceptance and Close Out:	
The calibration information reported in Monitoring Report version 2.0 is consistent with the calibration certificates verified by the verification team. It can be confirmed by the verification team that the monitoring equipments have been calibrated as per the monitoring plan. CL #9 is closed out.	
Acceptance and Close out by Lead Assessor:	Date: 15/10/2009 [Simon Zhao Xinguang]

Date:	10/04/2009	Raised by:	Simon Zhao
Type:	CL	Number:	CL #10
		Reference:	Section 3 of AU4
Lead Assessor Comment:		Date: 10/04/2009	
The electricity delivered to the grid by the project is significantly more than that estimated in the registered			

PDD. Please clarify why there is a significant difference and analyze the impact on the additionality.

Project Participant Response:

Date: 02/09/2009

The emission reductions from 25/06/2008 to 31/01/2009 is 100,420 tCO₂e, and the corresponding annualized emission reductions is 165,852 tCO₂e, while the annual emission reductions in registered PDD is 130,638 tCO₂e; then annual emission reduction is increased by 26.96%;

The reasons that the project plant generated more emission reductions than estimated in registered PDD are as follows:

- 1) the cotton straw are produced and collected mainly from October to January per year, then enough biomass residue makes the generation in these months higher than other months;
- 2) it was extreme dry weather in 2008, and the rainfall from Nov 2008-Jan 2009 is only one third of the value in the history; the dry weather made the collecting and storing of cotton straw easier, which provided enough biomass residue in this period;
- 3) The project owner has more and more experience in operation; the designed operating hours in FSR and PDD is 5500, as no biomass to generation project operated in China before December 2006, while the FSR was finished in March 2006. Thus in FSR the operating hours was assumed at a low value considering lack of operation experience in China. At the same time, the average operating hours of all the 42 biomass to generation projects applying for CDM before June 25 2008(the registration date of this project) was 5551 as contained in Appendix 1, which is quite similar to 5500. It implies that most of project owners lack experience and confidence in operation of the biomass generation projects in China;
- 4) But at the same time the NCV of the cotton straw (the main biomass residue) was assumed at a high value, 0.01744 TJ/t in FSR and PDD, as lacking experience, while in operation the maximum NCV is only 0.0121TJ/t, which increases the consumption of biomass fuel and the operation cost significantly.

The 1st reason is considered to be reasonable, and will not impact the additionality of the project;

The 2nd reason will not last in the future, and will not impact the additionality either;

The 3rd and 4th reason are out of expectation of FSR, and will last in the future, which might impact the additionality, then the financial analysis is used to identify the impact.

The changed key parameters between the registered PDD and actual operational parameters relevant to determine the emission reduction are listed below:

Item	Actual	Estimates based on actual	PDD	Difference
	A	B	C	D = B/C-1
Days (d)	221	365	365	
EG_y (MWh)	96877.28	160000.9	126,500	26.483%
BF_{k,y} (t)	122,681.31	202618.5	119,792	69.14%
ER_y (tCO₂e)	100,420	165852	130,638	26.96%

To assess the impact of the increased electricity generation and biomass consumption on the additionality of the project, we recalculated the IRR of the project using the registered IRR spreadsheet. In the revised IRR calculation spreadsheet, the operation hours was increased by 26.483%, which also led to the increase of net electricity supply by 26.483%. The biomass consumption was increased by 69.14% to 202618.5 t per year.

<p>Other parameters were not changed, except those depending on the operation hours (electricity generation) and biomass consumption, as other parameters and the calculation formulas had been validation during validation. The recalculated IRR of the project activity without CDM revenue was 2.24%, which was still below the applied benchmark of 8%.</p> <p>In conclusion, even the operating hours keeps higher in the future, considering the related biomass will also be increased, the additionality will not be affected.</p>	
Documentation Provided as Evidence by Project Participant:	
<p>The IRR calculation spreadsheet for registered PDD;</p> <p>The revised IRR calculation spreadsheet based on the current actual situation;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p>	
Information Verified by Lead Assessor:	
<p>The IRR calculation spreadsheet for registered PDD;</p> <p>The revised IRR calculation spreadsheet based on the current actual situation;</p> <p>Monitoring Report Version 2.0, dated 02/09/2009;</p>	
Reasoning for not Acceptance or Acceptance and Close Out:	
<p>The CL is closed based on the following reasons:</p> <p>1. The estimated values in the PDD, which are the same as the estimation in the FSR, were based on the information available at validation. Because at the time of developing the PDD/FSR, the information available to the project developer was that the average operation hours of a biomass project similar to the project activity was 5500 hours (See <u>Appendix 1 to the findings overview</u>). So the estimation of 5500 hours' operation hours in the FSR was reasonable at the time of developing the FSR. Due to the higher availability of biomass and higher satiability of the turbines and generators in actual operation, the operation hours and electricity generation is higher.</p> <p>2. The base for the increased electricity generation is the increased biomass consumption. And the costs for purchasing the biomass residues were also increased significantly.</p> <p>Using the increased operation hours (or net electricity delivered to the grid) and the increased biomass consumption to recalculate the IRR of the project, the result is still below the benchmark and the project is still additional.</p> <p>SGS can conclude that the additionality of the project is not changed as a result of the increase of electricity generation and biomass consumption. CL #10 is closed out.</p>	
Acceptance and Close out by Lead Assessor:	Date: 15/10/2009 [Simon Zhao Xinguang]

Appendix 1 to the Findings Overview

The operating hours of (proposed) CDM projects that started validation before June 25 2008 (the registration date of this project) in China:

	Project Title	Host Country	Period for Comments	operating hours
1	Henan Luyi 25MW Biomass Cogeneration Project	China	19 Apr 06 - 19 May 06	5500

2	Shandong Yucheng Xinyuan Biomass Heat & Power Plant Project ("Yucheng Biomass CHP")	China	04 Jul 06 - 02 Aug 06	4666
3	Shandong Shanxian 1*25MW Biomass Power Plant Project	China	08 Aug 06 - 06 Sep 06	5500
4	Hebei Jinzhou 24MW Straw-fired Power Project	China	10 Aug 06 - 08 Sep 06	5500
5	Zhongjieneng Jurong 2*12MW Biomass Direct Burning Power Plant Project	China	25 Aug 06 - 23 Sep 06	6500
6	Zhongjieneng Suqian 2*12MW Biomass Direct Burning Power Plant Project	China	25 Aug 06 - 23 Sep 06	6500
7	Biomass cogeneration project, in Xun county, Henan province, P.R. China	China	28 Aug 06 - 26 Sep 06	5500
8	Straw generating project in Wei county Hebei province, P.R. China	China	20 Dec 06 - 18 Jan 07	5500
9	Biomass generation project, in Sheyang county, Jiangsu province, P.R. China	China	20 Dec 06 - 18 Jan 07	5500
10	Shandong Kenli Biomass Generation Project	China	29 Dec 06 - 27 Jan 07	5500
11	Hebei ChengAn Biomass Cogeneration Project	China	29 Dec 06 - 27 Jan 07	5500
12	Shandong Shanxian 1*25MW Biomass Power Plant Project	China	16 Jan 07 - 14 Feb 07	5500
13	Jilin Jiutai Biomass Power Plant Project	China	17 Feb 07 - 18 Mar 07	6000
14	Jilin Nongan Biomass Power Plant Project	China	17 Feb 07 - 18 Mar 07	6000
15	Shandong Wudi Biomass Generation Project	China	22 Feb 07 - 23 Mar 07	4670
16	Heilongjiang Tangyuan Biomass Cogeneration Project	China	22 Feb 07 - 23 Mar 07	5166
17	Jilin Liaoyuan 50MW Biomass Cogeneration Project	China	19 Apr 07 - 18 May 07	5500
18	Heilongjiang Wangkui 50MW Biomass Cogeneration Project	China	19 Apr 07 - 18 May 07	5500
19	Shandong Gaotang 30MW Biomass Power	China	19 Apr 07 - 18 May 07	5500

	Generation Project			
20	Jiangsu Longyuan Donghai Biomass Power	China	05 Jun 07 - 04 Jul 07	5000
21	Straw-fired Power Generation Project in Chuzhou District, Huaian City, Jiangsu Province	China	05 Jul 07 - 03 Aug 07	5018
22	Anhui Anqing 30MW Biomass Power Generation Project	China	07 Aug 07 - 05 Sep 07	5866
23	Gaoyou 4MW Biomass Power Generation Project	China	09 Aug 07 - 07 Sep 07	7000
24	Jiangsu Rudong Biomass Power Generation Project	China	10 Aug 07 - 08 Sep 07	6277
25	Inner-Mongolia Wushenzhao Biomass-fired Cogeneration Project (30MW)	China	03 Oct 07 - 01 Nov 07	4486
26	Shandong Kenli Biomass Generation Project	China	15 Nov 07 - 14 Dec 07	5500
27	6MW Biomass cogeneration project, in Boxing County, Shandong Province, P.R.China	China	17 Nov 07 - 16 Dec 07	4812
28	Biomass generation project in Xun county, Henan province, P.R. China	China	08 Dec 07 - 06 Jan 08	5360
29	Jiangsu Lisen Biomass Power Project	China	16 Jan 08 - 14 Feb 08	7300
30	Shanxi Yuncheng 25MW Biomass Power Plant Project	China	03 Feb 08 - 03 Mar 08	4840
31	Hebei Guantao Biomass Cogeneration Project	China	06 Feb 08 - 06 Mar 08	4170
32	Guodian Liaocheng Biomass Power Project	China	22 Feb 08 - 22 Mar 08	4620
33	Heilongjiang Wangkui 50MW Biomass Cogeneration Project	China	29 Feb 08 - 29 Mar 08	5500
34	Jilin Liaoyuan 50MW Biomass Cogeneration Project	China	29 Feb 08 - 29 Mar 08	5500

35	Henan Changyuan Biomass Power Project	China	21 Mar 08 - 19 Apr 08	4944
36	Jilin Nongan 50MW Biomass Power Plant Project	China	21 Mar 08 - 19 Apr 08	6000
37	Jilin Jiutai 25MW Biomass Power Plant Project	China	21 Mar 08 - 19 Apr 08	6000
38	Anhui Anqing 30MW Biomass Power Generation Project	China	08 Apr 08 - 07 May 08	5866
39	Jiangsu Rudong Biomass Power Generation Project	China	08 Apr 08 - 07 May 08	6277
40	Jiangsu Longyuan Donghai Biomass Power Project	China	11 Apr 08 - 10 May 08	5280
41	Anhui Suzhou Biomass Power Generation Project	China	08 May 08 - 06 Jun 08	5525
42	Jilin Wangqing 2×25MW Biomass Cogeneration Project	China	21 May 08 - 19 Jun 08	6500
Average:				5551

10. Statement of Competence

Statement of Competence

Name: **Zhao, Simon** SGS Affiliate: **SGS China**

Status

- Lead Assessor	<input checked="" type="checkbox"/>	- Expert	<input type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	<input type="checkbox"/>
<i>Sub scope(s):</i>	
2. Energy Distribution	<input type="checkbox"/>
<i>Sub scope(s):</i>	
3. Energy Demand	<input type="checkbox"/>
<i>Sub scope(s):</i>	
4. Manufacturing	<input type="checkbox"/>
<i>Sub scope(s):</i>	
5. Chemical Industry	<input type="checkbox"/>
<i>Sub scope(s):</i>	
6. Construction	<input type="checkbox"/>
<i>Sub scope(s):</i>	
7. Transport	<input type="checkbox"/>
<i>Sub scope(s):</i>	
8. Mining/Mineral Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
9. Metal Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
10. Fugitive Emissions from Fuels (solid, oil and gas)	<input type="checkbox"/>
<i>Sub scope(s):</i>	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	<input type="checkbox"/>
<i>Sub scope(s):</i>	
12. Solvent Use	<input type="checkbox"/>
<i>Sub scope(s):</i>	
13. Waste Handling and Disposal	<input type="checkbox"/>
<i>Sub scope(s):</i>	
14. Afforestation and Reforestation	<input type="checkbox"/>
<i>Sub scope(s):</i>	
15. Agriculture	<input type="checkbox"/>
<i>Sub scope(s):</i>	

Approved Member of Staff by: **Siddharth Yadav** Date: **05/11/2009**

Statement of Competence

Name: **Wu, Michael** SGS Affiliate: **SGS China**

Status

- Lead Assessor	<input checked="" type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	<input type="checkbox"/>
<i>Sub scope(s):</i>	
2. Energy Distribution	<input type="checkbox"/>
<i>Sub scope(s):</i>	
3. Energy Demand	<input type="checkbox"/>
<i>Sub scope(s):</i>	
4. Manufacturing	<input type="checkbox"/>
<i>Sub scope(s):</i>	
5. Chemical Industry	<input checked="" type="checkbox"/>
<i>Sub scope(s): Adipic acid production, Nitric Acid or Caprolactam Production</i>	
6. Construction	<input type="checkbox"/>
<i>Sub scope(s):</i>	
7. Transport	<input type="checkbox"/>
<i>Sub scope(s):</i>	
8. Mining/Mineral Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
9. Metal Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
10. Fugitive Emissions from Fuels (solid, oil and gas)	<input type="checkbox"/>
<i>Sub scope(s):</i>	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	<input type="checkbox"/>
<i>Sub scope(s):</i>	
12. Solvent Use	<input type="checkbox"/>
<i>Sub scope(s):</i>	
13. Waste Handling and Disposal	<input type="checkbox"/>
<i>Sub scope(s):</i>	
14. Afforestation and Reforestation	<input type="checkbox"/>
<i>Sub scope(s):</i>	
15. Agriculture	<input type="checkbox"/>
<i>Sub scope(s):</i>	

Approved Member of Staff by: **Siddharth Yadav** Date: **04/11/2009**

Statement of Competence

Name: **Han, Grace** SGS Affiliate: **SGS China**

Status

- Lead Assessor	<input checked="" type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	<input type="checkbox"/>
<i>Sub scope(s):</i>	
2. Energy Distribution	<input type="checkbox"/>
<i>Sub scope(s):</i>	
3. Energy Demand	<input type="checkbox"/>
<i>Sub scope(s):</i>	
4. Manufacturing	<input type="checkbox"/>
<i>Sub scope(s):</i>	
5. Chemical Industry	<input type="checkbox"/>
<i>Sub scope(s):</i>	
6. Construction	<input type="checkbox"/>
<i>Sub scope(s):</i>	
7. Transport	<input type="checkbox"/>
<i>Sub scope(s):</i>	
8. Mining/Mineral Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
9. Metal Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
10. Fugitive Emissions from Fuels (solid, oil and gas)	<input type="checkbox"/>
<i>Sub scope(s):</i>	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	<input checked="" type="checkbox"/>
<i>Sub scope(s): HFC-23 emission from HCFC-22 production</i>	
12. Solvent Use	<input type="checkbox"/>
<i>Sub scope(s):</i>	
13. Waste Handling and Disposal	<input type="checkbox"/>
<i>Sub scope(s):</i>	
14. Afforestation and Reforestation	<input type="checkbox"/>
<i>Sub scope(s):</i>	
15. Agriculture	<input type="checkbox"/>
<i>Sub scope(s):</i>	

Approved Member of Staff by: **Siddharth Yadav** Date: **26.11.2009**

Statement of Competence

Name: Chakraborty, Shivaji SGS Affiliate: SGS India

Status

- Lead Assessor	<input type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input checked="" type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	<input checked="" type="checkbox"/>
<i>Sub scope(s): Solar, Biomass Electricity Utilization</i>	
2. Energy Distribution	<input checked="" type="checkbox"/>
<i>Sub scope(s): Energy Distribution</i>	
3. Energy Demand	<input type="checkbox"/>
<i>Sub scope(s):</i>	
4. Manufacturing	<input type="checkbox"/>
<i>Sub scope(s):</i>	
5. Chemical Industry	<input type="checkbox"/>
<i>Sub scope(s):</i>	
6. Construction	<input type="checkbox"/>
<i>Sub scope(s):</i>	
7. Transport	<input type="checkbox"/>
<i>Sub scope(s):</i>	
8. Mining/Mineral Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
9. Metal Production	<input type="checkbox"/>
<i>Sub scope(s):</i>	
10. Fugitive Emissions from Fuels (solid, oil and gas)	<input type="checkbox"/>
<i>Sub scope(s):</i>	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	<input type="checkbox"/>
<i>Sub scope(s):</i>	
12. Solvent Use	<input type="checkbox"/>
<i>Sub scope(s):</i>	
13. Waste Handling and Disposal	<input type="checkbox"/>
<i>Sub scope(s):</i>	
14. Afforestation and Reforestation	<input type="checkbox"/>
<i>Sub scope(s):</i>	
15. Agriculture	<input type="checkbox"/>
<i>Sub scope(s):</i>	

Approved Member of Staff by: Siddharth Yadav Date: 27 November 2009